The Air Line Pilot

January, 1952

A line pilot views the Martin 404

One of the fleet of 41 Martin 404 airliners ordered by TWA.

A Line Pilot Views

THE MARTIN 404

By
Bart Hewitt—TWA

During the week of September 10, 1951, I had the opportunity to visit the Glenn L. Martin plant at Middle River, Maryland, as a member of the Air Line Pilots Association Committee on the General Evaluation of the 404. The evaluation program was set up by the Martin Company at the request of ALPA and the committee was invited to attend an enlightening session at the factory. Since that visit I have attended TWA's Ground School in Kansas City studying the 404 from an operational standpoint and completing the flight transition course outlined for company pilots familiar with the 202-A. This does not qualify me to write as an expert on the 404, but I was impressed with many things which I feel warrant passing along to others interested and acquainted with the air line industry.

The Martin 404 is not another 202, nor is it a blown up version of the 202 even though it will take an experienced eye to differentiate between the two airplanes sitting side by side. *The 404 is a new airplane.* It uses many of the same component parts such as engines, props, etc., *but make no mistake about its not being a new airplane.* It is new structurally, and the various systems such as electrical, hydraulic, heating and pressurizing are entirely different from those of the Model 202 airplane.

Structural

Let's start with the structural changes first. Many of these are due to the pressurization of the cabin, a major difference from the 202. Cabin doors and belly compartment doors have been completely changed and beefed up to withstand the pressure and the air lines operating the equipment on these items due to their greater strength. The cabin has, of course, been sealed so that passenger comfort is increased by lower noise level as well as through pressurized lower level flying and easier breathing while the flight is cruising at altitudes where higher airspeeds are possible. The Martin company has made an intensive study of the differences between the 24 ST and 75 ST aluminum used in various parts of the ship, paying particular attention to the use of the proper material where the job calls for certain qualities of strength as well as durability. The wings are of the same aerodynamic configuration as that of the 202 but that is where the similarity stops. Inside, the wing has been structurally beefed up to carry the loads which will be imposed on it when turbo-prop power plants are installed. An en-

tirely new wing attachment to the center section of the airplane has been made involving a 'scarf splice' arrangement which has withstood tremendous loads and far more cycling in static load tests than will ever be required in air line operations. The landing gear has been made heavier and stronger on the 404 to take care of increased weight of the airplane and its proposed use in short haul service where it will necessarily take more of a beating than in medium haul work.

Aerodynamically

Aerodynamically the 404 is pretty much the same ship as the 202 with a few differences. One distinguishing feature for the untrained eye in helping to differentiate between the 202 and the 404 is the cockpit windshield. The windshield height has been increased four inches on the 404 by eliminating the eyebrow windows of the 202; providing better forward visibility for the pilot above and ahead of the ship. If anyone wants to take the trouble to count them, he will find one more picture window on the cabin side of the fuselage. The 404 carries forty passengers with ten rows of seats, whereas the 202 has thirty-six seats in nine rows. Now, there is one more change in the aerodynamics which helps a whole lot. In lengthening the fuselage to accommodate that extra row of passenger seats, the entire tail assembly enjoys a better airflow, making for higher controlability on the elevators at low speeds. This affords the pilot longer control over the elevators on landing and gives him three or four seconds of 'playing speed' after flaring out his glide at landing. The 202 has a habit of coming right on down when it is ready to and you have to be right with it at the exact moment or there is a jolt when ground contact is made. The 404 not only has a little built-in playing speed at flareout, but also a new draglink setup on the main gear which helps absorb a good bit of the jolt at touchdown. The combination of the two elements should make for a lot less unfavorable comment from the passenger who might drop his uppers on a 202 and feel like telling the pilot about it.

Stabilizer

The 404, like the 202, has the variable angulation horizontal stabilizer which changes attitude with the use of wing flaps. This changes the ship's attitude gradually as the flaps are lowered and relieves the pilot of the necessity of retrimming the ship as he lowers his flaps. That part is very nice for the pilot, but the real reason for this setup is that flap movement changes the airflow over the stabilizer sufficiently to place loads on the elevator which are in excess of the seventy pound maximum allowed by the CAA with no tab changes at all allowable center of gravity positions. In other words, if this fancy rig were not used, the CG would be penalized as to forward and aft range. As a point of interest, the stalling speeds and characteristics themselves would also be penalized if the stabilizer were in a fixed position. There are two changes in this setup from the 202. The torque tube and worm gear combination of the 202 have been changed to an electrically driven motor arrangement in the 404 and there is a warning light on the panel in case the thing gets out of phase when the flaps are being operated. The plane handles without too great difficulty even when the stabilizer is not used in coordination with the flap movement.

Electrical System

Now, let's look at the electrical system for a bit. Like the 202 this ship has quite an electrical setup, but it is an entirely new system and the bugs which were in the 202 have majoritatively been eliminated. Design-wise this should be a very good electrical setup provided all its components are of the highest quality and durability. That will have to be seen during the extended operation of the equipment. The generators now tie in directly to the belly busses which handle all the heavy loads. The nacelle buss is cold except when starting, feathering or unfeathering, a major change from the 202. The main belly busses are in an inverted position and protected by phenolic covers to prevent metallic particles from dropping in and shorting out the buss. The battery setup is like the 202, a 42 ampere hour unit 28 volt capacity. On this ship as on most highly electrical new models, the battery is not much of a storage plant for electricity but merely a small reservoir such as the pressure accumulators in the hydraulic system. The system requires constant recharging either by the generators or a ground power unit when the engines are not running. Battery power alone will not operate all the electrical units on the plane for any length of time.

Cockpit. Location of every switch and control is the result of discussions with airline pilots.

Interior. Hot air, at 125 degrees F. is ducted between the dual panels.

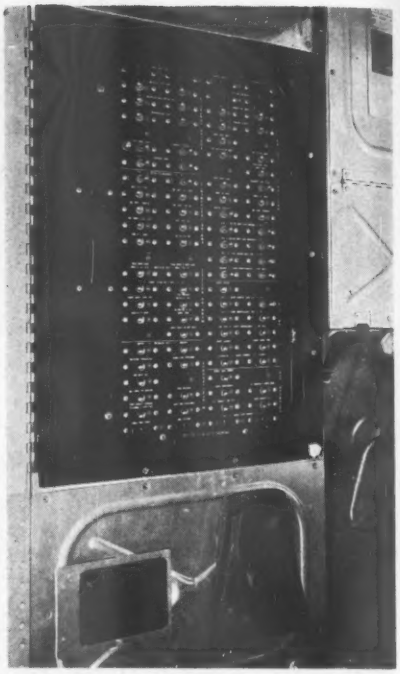
The ship's main electrical loads are divided between two main busses, one called the forward distribution buss handling approximately 85 per cent of the total load, and the other called the essential buss which controls about 15 per cent of the load including only units which are absolutely essential to the safe operation of the ship. This enables the pilots, in the event of an electrical fire or other dangerous malfunctioning in the system, to eliminate 85 per cent of the possible causes of trouble immediately by simply deenergizing the forward distribution buss by means of a gang switch in the cockpit. Thus they are able to continue flight with the essential equipment operating, while checking the system to ascertain the exact cause of the trouble. Another important change in the electrical system is the removal from this system of the Fire Control Panel. The 202 has a strictly electrical fire control setup which might prove to be of very little help to the pilot when the fire is in that same system. The 404's fire control panel is all mechanically operated by means of pull valves for fluid shutoffs and CO-2 selection. The 404's belly electrical compartment has a bare minimum of inflammable material in or near it and what is present is all carefully shrouded.

Props

While on the subject of the electrical system, we might make a few points concerning the propellors. The props are essentially the same as those on the 202 but improvements have been made with regard to their operation. They are now completely operated by electricity throughout their range from high to low pitch and in reversing. Troubles which developed with the 202 in the blade switches shorting and in the breaking of the solenoid power supply line have been remedied. New type blade switches are being used which Hamilton Standard says are of higher quality and should insure longer life of operation. The supply line has been made more flexible and better junction attachments, making firmer connections, have been incorporated. Another fix in this department is that an access tap has been made in the nose case of the engine so that if the power supply line should fail it will not be necessary to pull the prop off to replace that line as is the case with the 202 installation. There is one remote possibility of reversing a prop in flight. That is when, in coming out of a full feathered configuration, a blade switch short might make it possible for the blades to proceed through low pitch to reverse position. If this should occur, the feathering pump will return the prop to feathered position at which time the nacelle buss should be deenergized, preventing the cycle from continuing.

Hydraulic

The hydraulic system is supplied with pressure from the two engine pumps and an emergency electric pump. The electric pump is the only source of power for the operation of the tail ramp so the pilot knows before he takes off whether or not he has an emergency hydraulic power supply. He has to have it or the tail ramp will not retract. The emergency gear and flap extension system, of course, are the other components operating off this setup. Emergency brake pressure is built up in a separate accumulator which is run off the primary hydraulic system. The main additions to the hydraulic setup are the aileron boost and the wing flap actuating cylinders. There was a great deal of squawking from the pilots flying the 202's about insufficient lateral control and too much aileron travel required to effect lateral control at low speeds. Aileron boost control has been added with a reduction in aileron control movement from 120 degrees on the 202 to 80 degrees on the 404. It really provides very effective assistance and is a great improvement. The boost cylinder itself is a marvelously simple gadget and should give a minimum of trouble being tied in with the primary hydraulic system. This point will require the system to be charged at all times rather than bypassing pressure during normal cruise as in the 202. The only hitch in this marvelously simple gadget is when comes the time the boys on the ground have to re-rig it after a pilot has had to manually disconnect it in flight. The adjustments are made with very small tolerances and have to be just about perfect so the maintenance lads will have to get sharp



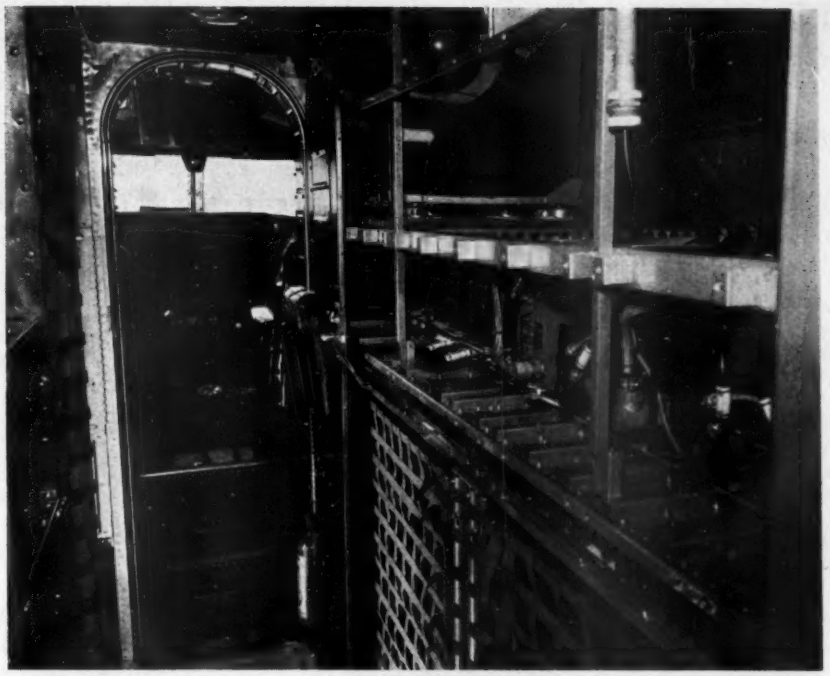
Master electrical circuit breaker panel located in cargo compartment, aft of cockpit.

Rear view of trailing edge showing large double slotted flaps which contribute to exceptional slow speed performance and safety.

on that operation when it has to be performed. The booster cylinder can be disconnected electrically or manually if necessary from the cockpit. No rerigging is necessary if it is electrically disconnected. The ship handles without too much effort with the boost off and as an additional aid, the effective rudder area has been increased by cutting down the vertical stabilizer some and extending the rudder forward above the stabilizer. The rudder is also counterbalanced, a change from the 202. The wing flaps operating with actuating cylinders represent a change from the 202's jack screw setup and there is a completely new emergency extension arrangement. Emergency pressure is supplied by the electric pump through an entirely separate system to the actuating cylinders controlled by the emergency flap extension valve which will offer the same control over the flap movement as the normal system. One hitch in this is that the normal flap valve must be coordinated with the emergency valve in retracting flaps to provide a bleed for downside pressure when upside pressure is being built up. A popoff must be incorporated in the setup or someone will be spreading lines before long. So much for the hydraulics —it looks like a very good system and should offer little trouble.

Heating System

The cabin heating system has been changed around quite a bit from the 202 mainly due to the pressurization feature. The 404 incorporates two cabin heaters and a refrigerating unit which operates off the main cabin compressor. There are also two large recirculating fans in the system to keep things stirred up. Heating or refrigeration is available on the ground but the latter requires the compressor which means that the right engine must be running so it will not be utilized except during taxiing and of course, when the ship is airborne. Ground heating only requires that you have a ground power unit hooked up to run the blowers and an engine fuel pump to supply the heater with fuel. It's mighty nice to climb into one of these birds on a cold winter night and lean against a good warm cabin wall. The cabin heaters also supply heat to the cockpit windshield for deicing, and of course, to the cockpit itself. The wing anti-icing heaters now are called on to do nothing but heat the wings and tail. Ducting has been improved in the wing anti-icing setup and heat is now run to the outboard areas in ducts and dumped into the leading edges at various locations with a consequent lower heat loss as it proceeds outboard. Anti-icing heat temperatures are now measured both in the duct downstream of the heater and in the outer wing ducts with indications on the cockpit panel. The pressurization system is the nuts, but it would have been nice if the compressor manufacturer hadn't wanted so much dough for the outfit. Maybe we could have afforded more than one unit per airplane so we could have had an alternate source of pressure, but at 16 G's apiece I can't blame the man for not buying a whole bail of them. We'll just have to take the best of care of them and see how long we can make them last. The system is quite simple and works beautifully, but it can be fouled up by mishandling. The unit is Air Research built and is operated by a Pesco vane type hydraulic pump. It requires about 35 horsepower to operate in its low ratio and about 75 h.p. in high ratio. Being set up on the right engine, the compressor has an automatic disconnect feature provided if the left engine should be auto-feathered on takeoff and it will also auto-disconnect if the Zone No. 2 Manual Fire Pull Valve on the right engine is used. Little more need be said about the pressurization system except that it will enable the airplane to get on upstairs a ways where its aerodynamics can be utilized to the greatest extent. The refrigeration system requires more of a load on the compressor than straight pressurization because both must be accomplished at the same time when airborne. Hence, a higher pressure is present on the lines running from the compressor into the cabin system. There have been a few line failures due to this indicating that higher pressure resistant lines and fittings are in order for it to be trouble free, but basically the system has been tried and proven on other equipment and has been very successful. When it has been utilized for a while and the bugs are whipped, it ought to add a great deal to general passenger comfort, a point which the manufacturer has kept in mind throughout the entire design stage of this ship.



Radio installation emphasizing ready accessibility. Rack cover is removed.

Cockpit

From the cockpit viewpoint, the 404 like the 202 has one of the most beautiful designs. All items of interest and the entire control setup in the cockpit are readily tangible from either seat. The engine and power plant controls, cabin heating system controls and main electrical system switches are all located on the center overhead panel. The fire control and carbon dioxide selector pull valves are all at eye level under the glare shield. Throttles, prop controls, carburetor heat controls and gear and flap controls are on the main quadrant

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Around the World via 90° North Latitude

Reprinted from "Combat Crew"

Captain Blair continues the narrative of his globe-girdling flight in an F-51. Last month's AIR LINE PILOT left Blair in Oslo. He now prepares to depart:

With Lt. Col. Jon Tredte, RNAF, Commanding Officer at RNAF Base, Bardufoss.

By Capt. Charles F. Blair, Jr.
Pan American World Airways

While waiting for my departure date most of the daylight hours were spent attending to aircraft maintenance, installing emergency equipment and getting a completed briefing from the Norwegian CAA and RNAF on airports and radio facilities in northern Norway. A USAF Air Rescue Albatross from Wiesbaden, Germany, which happened to be visiting in Oslo provided me with a complete set of emergency gear, and I got a thorough briefing on Arctic survival from the USAF as well as the Norwegians.

In case the weather at my refueling airport at Bardufoss should turn out to be unsuitable on the 29th, I arranged to operate through Lulea, Sweden, which is in comparatively flat country 250 miles to the southeast of Bardufoss. The weather at Bardufoss, because of the precipitous terrain, would be a critical consideration. Bardufoss requires a VFR approach while Lulea is satisfactory for IFR.

Preparation

Because it is almost impossible to shuffle my maps around in the tiny cockpit, I spent my evenings memorizing the entire navigational procedure and landmarks for the length and breadth of Alaska, as well as the Siberian Coast, just in case I should foul up the navigation or experience a generator failure. I also listed all Alaskan radio stations, (range, broadcast and beacons) in the order of their frequencies, and with their identifications, so I could spin the ADF dial (or the emergency receiver dial) and make a quick reference to this list of stations. My charts included instrument letdown charts of all Alaskan airports, as well as various Canadian airports as far south as Seattle, the limit of my range. There were maps of Alaska in large and small scale indexed for ready reference in a small portfolio. I was completely organized for reverting to old-fashioned pilotage in case my electical system failed.

In a small map holder, I installed the Air Almanac page for the 29th of May, and pages from H.O. 214, 70 to 79° latitude which covered the declinations of the sun and moon at the projected time of my passage through that critical part of my flight to the north of Alaska. This would cover celestial observations at other than my precomputed times without the necessity of fumbling with a complete vol-

Working out a sight to check sextant accuracy before take-off from Bardufoss.

Captain Blair is awarded the Norwegian Aero Club's Gold Medal for 1951 in recognition of his flight. In the usual order, are, General Hj. Riiser-Larsen, Captain Blair, Colonel Bernt Balchen.

ume of H.O. 214 and the Air Almanac. A spare bubble for the Link sextant was also carried so that it would be immediately available.

As the flight actually turned out it was never necessary to use any of this emergency navigational apparatus, but it was there at my elbow just in case.

While in Oslo I attempted to get a reasonable amount of rest and sleep but found that I was too busy to properly attend to this important item. However, I did avoid becoming involved in too much unnecessary activity, and thus was able to start out with a reasonable supply of energy.

To Bardufoss

Everything worked out as planned and late in the morning of May 29 I proceeded to Bardufoss. Bardufoss is a fighter strip built by the Germans in World War II, snuggled in a deep fjord.

While circling to land at Bardufoss, I experienced my one and only serious problem of the entire trip. A piece of my cockpit canopy came loose and blew off. It left a gaping hole just aft of the cockpit and I was convinced I was going to walk home from this rather remote spot in the far north. However, upon landing, I was informed that the missing piece of canopy had fallen in a nearby snowdrift from which it was quickly recovered and re-installed.

During the three hour stop at Bardufoss, besides attending to details incident to refueling and maintenance, I cruised the length of the concrete strip in a jeep, observing landmarks to be used as reference points on the takeoff. Because the west end of the strip is snuggled against a sizeable hill, it would be necessary to take off to the east with a light tail wind. This would make the runway length somewhat critical, as did the fuel loading of the aircraft with its extreme rearward c.g. I evolved a couple of odd emergency procedures for returning to the airport if something went wrong after the takeoff. Because the aircraft would be so extremely tail heavy, any maneuver would have to be made with great care due to the possibility of reversibility of flipper in a turn and instability. For such reasons and because of the terrain, my procedures had to be worked out with extra precautions. I tucked these items away in the back of my mind for possible future reference. Also, I took a last minute shot on the sun and thus assured myself that no index error had crept into the instrument. I carefully set my watches and the plane's clock. In order to navigate in the far north, it is vital to know the time of day.

To Fairbanks

After a final briefing on the emergency rescue arrangements provided by the patrolling Catalina, I took off at 1458 GMT en route to Fairbanks. Upon reaching 15,000 feet, my cruising altitude to Spitzbergen, I set up the astrocompass and from this point to Point Barrow I did not use the magnetic compass except to check it as an item of curiosity. To simplify the navigational problem, I planned to fly due north up the 20th East meridian to the Pole, thence south on the 160th West meridian to 75 degrees north and thence to Point Barrow. I established myself on the 20th meridian shortly after takeoff.

The entire flight was made on oxygen. Shortly after takeoff, I opened up the metering valve to full flow for a short time. I was tired, but a few good whiffs sharpened me up. When cruising, I set the metering valve at minimum flow, not only for oxygen economy but because it is just as well not to get too much of it Incidentally, the microphone in my mask had failed, so in order to transmit, it was necessary to unhook the mask briefly for short bursts of conversation in between strong whiffs of oxygen. It was no problem to eat within the mask, although the average gourmet might be a little critical. (I noted the following day the mask no longer fit my face. I had lost

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Briefing outside a Norwegian operations office.

Camera

Signing the ALPA-Northwest Airlines contract. Standing (left to right) are N. D. Jackson, Director of Labor Relations; V. Doyle, Council 1; H. Kinney, Operations Dept.; M. Swanson, Council 1; R. O'Neill, Council 1; D. Cox, Mgr. Flight Operations; C. Smith, Chairman Council 1; G. Henderson, Council 54; K. Linville, Council 54; G. Markham, Council 1; C. Ekland, Council 1. Seated (left to right) are F. Judd, Operations Vice President; L. Glotzbach, Vice President; and J. Christie, Headquarters. Not present for the picture, was Warren Schultz.

The PAA-Master Executive Council convened January 18, in Washington, D. C. Seated (left to right) are J. M. Marcum, Council 36 (visitor); H. G. Evans, Council 56, Chairman; Roy Hutchinson, Council 101; C. T. Hawkins, Council 17; J. A. Livers, Council 36, and R. C. Clausen, Council 55, Vice-Chairman. Second row (left to right) are L. Cates, ALPA-DCA; F. W. Baggott, Council 10, Senior Co-pilot Representative; R. H. McMurray, Council 10; R. S. Wisenbaker, Council 37; T. J. Flanagan, Council 17; E. M. Corns, Council 30, and L. C. Lorenz, Council 37. Back Row (left to right): J. E. Gellatly, Jr., Council 55; W. M. Masland, Council 36; P. E. Ambort, Council 56, and G. W. Jones, Council 30.

Blase Dallas, Tex., workers drive home along busy Lemon avenue completely oblivious to an airliner making its approach to Love Field. Through the winter months when the North-South runway is most used, planes skim over car tops as they come in to land.

Convair-Liner 340 noses off the production line at San Diego. The first of forty was delivered to United Air Lines.

Trans World Airways Captain Earl Fleet, Council No. 3, Kansas City, Mo., with a portion of his collection of international dolls. Captain Fleet has been flying for 22 years and has dolls from India, China, Bali-Bali, Russia, and Turkey to name a few. He once drove 500 miles through African jungle to get a unique Gold Coast specimen.

News

Grievance

On January 15, 16, 17 and 18, 1952, hearings were held in New York City on the dismissal grievance of W. L. Noftsinger. The hearings were presided over by Judge Adolph E. Wenke, Associate Justice of the Supreme Court of the State of Nebraska, appointed as neutral arbiter by the National Mediation Board.

Captain Noftsinger is a former TWA pilot who had flown on the Intercontinental Division of TWA for approximately 9½ years. He had been with the company approximately 11 years, when on March 16, 1951, he allegedly failed to pass an instrument check. As a result, he was dismissed from the employ of the company. Previous to that time, Captain Noftsinger's record for conducting a safe operation on behalf of TWA was without blemish. He had never damaged an airplane or been involved in a collision or near collision, and had never had filed against him any reprimand, charge or violation by the CAA.

In attendance at the hearings were a considerable number of pilots from the various airlines, based in New York. It was developed during testimony by Captain J. M. Walker, a check pilot who had given Captain Noftsinger the instrument check, that one of the problems given Noftsinger had been correctly executed but that Captain Walker had failed Noftsinger on the problem due to Walker's lack of understanding of the technical aspects of the problem.

In attendance for the Association were Captains H. W. Sherwood and Gordon Granger, members of the TWA Pilots' System Board of Adjustment, and John B. Lampe of ALPA's Legal and Conciliation Department. Captain C. W. Morehead appeared on behalf of Captain Noftsinger as an expert witness and gave testimony concerning certain technical aspects of the case encountered during this hearing.

Alfa Means Able

There is a new phonetic alphabet for air-ground communications. The words Alfa, Bravo, and Coca, for example, have been sustituted for the familiar Able, Baker, and Charlie, to represent the letters A, B, and C.

The new pronouncing alphabet was developed by the communications division of the International Civil Aviation Organization and officially adopted by ICAO, governing body of international aviation over most of the world.

Two language professors, a Frenchman and an American, were employed to select a list of words. The approved roster is a result of their thinking and of editing by various ICAO member nations.

The words picked are universally understood and can be pronounced in virtually every language.

Only one word — Victor — was salvaged from the old list.

Here's the new alphabet which pilots and radio operators are now memorizing:

A—Alfa	J—Julliet	S—Sierra
B—Bravo	K—Kilo	T—Tango
C—Coca	L—Lima	U—Union
D—Delta	M—Metro	V—Victor
E—Echo	N—Nectar	W—Whiskey
F—Foxtrot	O—Oscar	X—Extra
G—Golf	P—Papa	Y—Yankee
H—Hotel	Q—Quebec	Z—Zulu
I—India	R—Romeo	

"Julliett," incidentally is misspelled in any language, but the experts apparently muffed that one because that's the way it appears in official records.

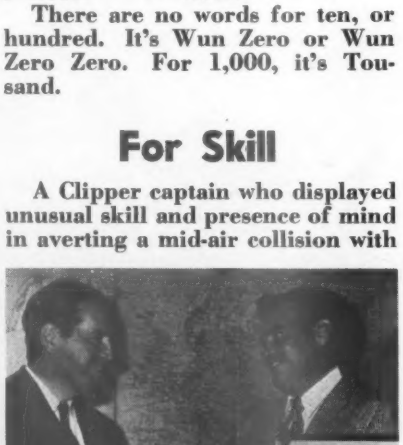
Pronunciation of numerals is not exactly the King's English, but close to it:

0—Ze-ro	4—Fow-er	8—Ait
1—Wun	5—Fife	9—Nin-er
2—Too	6—Six	
3—Tree	7—Sev-en	

There are no words for ten, or hundred. It's Wun Zero or Wun Zero Zero. For 1,000, it's Tousand.

For Skill

A Clipper captain who displayed unusual skill and presence of mind in averting a mid-air collision with an unidentified aircraft while flying on instruments near New York last summer has been awarded a certificate of merit by Pan American World Airways.



FOR SKILL: Humphrey W. Toomey (left), manager of the Latin American Division of PAA, presents Captain Thorne with certificate of merit.

The citation was presented to Captain W. Thomas Thorne, Sr., member of New York Council, No. 17.

Thorne was at the controls of a Clipper as it took off from Idlewild Airport shortly before noon July 30, 1951, for Buenos Aires. A half hour out, a DC-3, flying an unauthorized course, came out of the fog and headed straight for Thorne's plane. The pilot jerked his 70-ton Clipper out of the way safely, averting what might have been a disaster.

MEC Officers

Numerous Master Executive Council meetings were held this month to take action on Council problems and to elect 1952 officers.

Eastern Airlines elected Michael J. Fenello, Council 51, New York, to the Chairmanship of its MEC. Vice-Chairman is J. D. Payne, Council 18, Miami. L. C. Transou, Council 7, Atlanta, was named Co-pilot Representative.

A meeting of the *American Airlines* MEC elected L. E. Burns, Council 92, Detroit, Chairman; Herbert Schmidt, Council 31, Los Angeles, Vice-Chairman; and W. Bettwy, Council 93, Washington, Co-pilot Representative.

United Airlines new officers for 1952 are R. L. Tuxbury, Council 52, New York, Chairman; P. L. Wallace, Council 12, Chicago, Vice-Chairman; and M. L. Bedell, Council 12, Chicago, Co-pilot Representative.

New MEC officers for *Trans-World Airlines* are Floyd Hall, Council 4, Los Angeles, Chairman; Ed Hall, Council 69, San Francisco, Vice-Chairman; and John Murphy, Council 2, New York, Co-pilot Representative.

Award

An award of $1,000 was recently presented to Captain T. S. Jobson, Council 57 (La.), by the Employees Suggestion Program of United Air Lines for his proposal to change the routing of DC-6 Mainliners leaving Portland (Ore.) southbound under instrument conditions.

Jobson, noting that ATC customarily routed southbound planes westward out of Portland when instrument conditions prevailed, suggested three more preferable

AWARD: Captain Jobson receives $1,000 check from E. F. Kiessig UAL's Assistant Flight Manager at Los Angeles.

routings. The one adopted has improved the schedule regularity of flights via Portland, reduced southbound instrument departure time there by some seven and a half minutes, and accounted for outright savings to UAL of $8,000.

Jobson, a resident of Palos Verdes, Calif., has been a UAL pilot for more than 18 years. His award was the largest made by the Program in 1951.

Merger

A plan for the consolidation of Braniff International Airways and Mid-Continent Airlines has been agreed upon by the directors of both companies, subject to approval of the stockholders of the two carriers and the Civil Aeronautics Board.

The combined companies will have a total of 7,662 unduplicated domestic route miles.

The combined fleets of the two companies will total 58 aircraft, consisting of nine DC-6s, nine DC-4s, thirty-five DC-3s, four Convair-Liners and one C-47 cargo plane. In April of this year Braniff will receive the first of a fleet of 20 new model Convairs. Mid-Continent also has six of the new model 44-passenger Convairs on order with delivery scheduled early in 1953.

ALPA-FCU Meeting

The fifth annual meeting of the ALPA-Federal Credit Union was held January 29.

A dividend of four and one-half per cent was voted for 1951.

Officers elected to fill vacancies were: Board of Directors, two year term, Hubert F. LeGendre, Robert D. Smith, and Waldo E. Thomas. Ray Black was named to a one year term on the Board.

Scruggs A. Colvin was elected to a two year term on the Credit Committee.

Two members were named for a two year term to the Supervisory Committee. They are M. R. Jones, and R. J. Wisda.

Wage Meeting

The Railroad and Airline Wage Board will meet during February with representatives of airlines and airline labor unions. The Board wants to determine whether airline workers approve RAWB's adaptation of existing regulations or want the Board to work out new regulations tailored to airline needs.

ALPA representatives will attend.

The full Board, Nelson M. Bortz, Chairman, Francis A. O'Neill, and Walter Nolte, will participate in the conferences.

Subsidies

An estimated $270,000,000 in subsidies has been given to the United States air lines since 1938, according to the CAB.

Outright subsidies for the United States air lines for the fiscal year ending June 30, 1951, total $34,500,000. In addition, $27,400,000 was paid to the air lines for carrying the mail for a total of $61,900,000, fiscal year ending June 30, 1951.

New Runways

Two 9,000-foot runways at Miami International Airport, Miami, Florida, are expected to be in use by March 1.

A $14,000,000 building program was completed last year, with at least $12,000,000 to be spent on similar projects in 1952.

Plans for this year include $4,500,000 for a new National Airlines terminal; $4,000,000 for a new maintenance building and other improvements by Eastern Air Lines; $2,000,000 for terminal expansion and other improvements by Pan American World Airways; and $1,000,000 each for terminal additions and new facilities by fixed base operators.

One Billion

United States commercial air transportation became a billion dollar a year industry for the first time in 1951.

Lewis C. Sorrell, research director for the Air Transport Association reported that total operating revenues from air transport operations exceeded 1 billion 43 million dollars in 1951. He said passenger traffic accounted for about 80 per cent of the receipts.

New Procedure

A new and more nearly painless border-crossing procedure has been developed for airline passengers between points in Canada and the United States and may soon spread to other parts of the world.

Under its provisions, passengers from Canada to the United States are being cleared through U. S. customs and immigration formalities before their planes take off from Canada.

Complete pre-clearance was inaugurated January 14 for passengers at Toronto, Canada, bound for Buffalo, N. Y., and New York City.

340

The first Convair-Liner 340 *(see Camera)* has rolled off the assembly line at San Diego for testing and delivery in March to United Air Lines.

Forty of the twin-engined, pressurized transports have been ordered by UAL at a cost of $23,117,000. Completion of the first plane followed the signing of the contract with Consolidated Vultee Aircraft Corporation by exactly one year. Deliveries will continue during 1952 and 1953.

Twelve other scheduled airlines have ordered Convair-Liners 340.

In Memoriam

Kenneth H. Kuhn
of Northwest Airlines, crashed January 19, 1952, while attempting a landing at Sandspit Airport, B. C.

John J. Pfaffinger
of Northwest Airlines, crashed January 19, 1952, while attempting a landing at Sandspit Airport, B. C.

Thomas J. Reid
of American Airlines, crashed January 22, 1952, while attempting a landing at Newark Airport, N. J.

Our sincere sympathy is extended to their wives and families.

In the future, the feature, "In Constant Memoriam," will appear only in designated memorial issues.

ALPA

ALPA-FCU

No. 2,000

Four years and a few days after its approval by the Federal Deposit Insurance Corp. (November 26, 1947) and less than four years after its actual activation, the ALPA-Federal Credit Union signed up its two-thousandth member. Dennis Fox, Colonial Air Lines, Council 28, New York, became member 2,000 on December 10, 1951.

A glance at the financial statements issued by ALPA-FCU during its comparatively brief existence marks it as a going concern. The first such statement, issued in March of 1948, listed 72 members. The amount of loans made at that time added up to only $1,380.

When Fox became the two-thousandth member, the amount of loans made had risen to $933,-157.53.

The advantages of Credit Union membership explain its steady growth. It is a cooperative, thrift, and loan organization, to be used by members and employees of ALPA. Before an individual can either save or borrow from the Credit Union, he must first become a member. This is done by obtaining an application card, and after filling it out, forwarding it with 25 cents for the membership fee, and at least $5 for one share, to the ALPA-FCU office.

The member is then voted upon by the Board of Directors. After being approved, he is eligible to either borrow or save money in the Credit Union.

If a member chooses to use the Credit Union for saving, he can either set up a regular savings program to suit his own needs and send the money periodically to the ALPA-FCU office for deposit, or he can simply deposit sums whenever it suits his convenience.

Twice a year, after January 1, and July 1, a statement is issued to each member which indicates his balance as of those dates.

When establishing a savings plan the most important factor to be considered is the safety of the deposits. The safety of the Credit Union cannot be over-emphasized. All funds are promptly deposited in a bank designated by the Board of Directors, whose deposits are insured by the Federal Deposit Insurance Corporation. A reserve for bad loans is set aside. The Federal Security Agency, a federal supervising authority, makes periodical examinations of the books and records.

At year's end, the interest on loans and investments earned in excess of expenses and necessary reserves is distributed to the members as a dividend. The dividends paid on savings are determined by the Board, and may not exceed 6 per cent. However, the payment has never been less than 4 per cent. Dividends are credited to a member's account in January and may be left on deposit to earn future dividends, or be withdrawn.

Following, is the Credit Union report for 1951:

Member number 2,000, Dennis Fox, receives his ALPA-FCU membership card from Donald J. Dionne, Credit Union representative of Colonial Air Lines Council 28, New York. Colonial recently initiated payroll deductons for its pilots.

ALPA FCU Financial and Statistical Report of December 31, 1951

BALANCE SHEET

Assets

	Dec. 1951
Loans (566)	$300,138.18
Cash	67,892.51
U. S. Bonds	135,957.82
Federal Savings & Loan	
Furniture and Fixtures	2,185.48
Prepaid Expense and Misc.	426.05
Total	$506,600.04

Liabilities

Shares	$477,867.71
Reserve for Bad Loans	3,885.31
Undivided Profits	512.75
Profit	24,333.27
Accounts Payable	1.00
Total	$506,600.04

STATEMENT OF INCOME & EXPENSE
(Year to Date 1951)

Income

Interest on Loans	$33,399.61
Investment Income	3,376.65
Other Income	8.71
Total	$36,784.97

Expenses

Office Supplies	$ 833.81
Educational Expense	50.94
Loan Insurance	2,237.84
ALPA Reimbursement	7,050.00
Depreciation	633.60
Miscellaneous	1,645.51
Total	$12,451.70
Net Profit	$24,333.27

Statistical Information

	Dec. 1951
Number of Members	1,934
Number of Potential Members	9,307
Loans Made Since Organization (Number)	1,522
Loans Made Since Organization (Amount)	$971,044.87

Engineering

Northeast Crash

ALPA sent representatives to the scene of the crash in which a Northeast Airlines Convair 240 landed in the bay near LaGuardia Airport, January 14.

The aircraft was piloted by A. V. R. Marsh. Austin Briggs was co-pilot, and Miss Carolyn Hill was the stewardess. There were no fatalities.

ALPA was represented by Captain Ayers Chaves, chairman, Northeast Council 9; M. H. Anderson, former chairman, same Council; Peter Dana, safety representative for Council 9; and Carl F. Eck, Headquarters.

Northeast Airlines was represented by Assistant Operations Manager, B. S. Dixwell.

Joseph Fluet was the investigator in charge for the Bureau of Safety Investigation.

No date has been set, as yet, for the accident hearing.

Training Accident

Crash representatives from ALPA also inspected the scene of the January 9, Northwest Airlines training accident which occurred in the vicinity of the Minneapolis airport. There were no fatalities.

Pilots involved were Captains Robert W. Ausley, Council 1; O. D. Schroeder, Council 1, and co-pilot LeRoy M. Anderson. ALPA was represented by Burke Frees, crash representative for Northwest Council 1, Minneapolis, and T. G. Linnert, Headquarters.

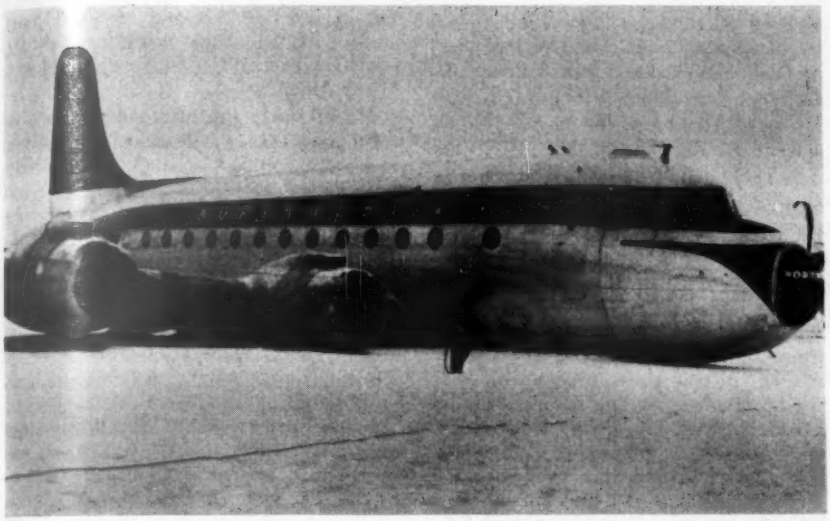
The skilfully executed forced landing resulted in only minor damage to the aircraft. It is not yet known whether there will be a CAB hearing.

Resume

Considerable activity in ALPA's Engineering and Air Safety Department and its Engineering and Air Worthiness Advisory Committee transpired this month.

Material from the CAB Bureau of Safety Regulations had to be studied and analyzed. Draft releases 51-11, regarding a review and amendment of air worthiness regulations for transport category airplanes received extensive study as did draft release 51-6, scheduled inter-state air carrier and operating rules. These were of considerable importance to ALPA.

Other recent draft releases and proposed regulations issued from the CAB recently that were commented upon by ALPA and this committee of pilots were draft release 51-8 relating to regulations



ALPA representatives investigated the emergency landing of this Northwest Airlines training flight, January 9, in a swamp area just west of Wold-Chamberlain airport.

providing emergency evacuations on transport aircraft; draft release 51-19, duty time limitations for flight dispatchers; draft release 51-10, automatic indications of power failure; draft release 51-12 relating to new regulations for stalling characteristics of large transport type aircraft; draft release 51-13 regarding a proposal to eliminate mandatory certification in transport category of the older air line airplanes; and draft release 51-14, regulation for wing flap position indicator.

TGL-CFE

The Facts Are These

Retributive Justice

In these troubled times, more and more groups, originally thinking only to protect their own specific interests, are finding it mutually advantageous to pool their joint efforts in furthering their goals. A notable example of this is found in the joint application of the United Auto Workers' Walter Reuther and General Motors' Charles Wilson to the government for an easing up on material cut backs to the automobile industry. Headaches such as lowered production and rising unemployment were the immediate spurs.

The American Medical Association is currently engaged in an all-out struggle to prevent government subsidy of medical schools. Forces bringing pressure on the government supporting this subsidy point out an estimated shortage by 1954 of over 24,000 doctors. The AMA on the other hand logically points out that the modern physician due to technological advances such as the automobile, wonder drugs, etc., delivers approximately 50 per cent more care than he was able to deliver in 1939. Because of the AMA's cry against "socialized medicine," many partisan groups have come to their aid in an attempt to discredit the present administration. However, what the AMA needs more than anything else is an aroused public opinion sympathetic to their viewpoint. Unfortunately, because some medics, taking advantage of their protected field, misjudged their customers' ability to pay and overcharged, there is a dangerous lack of wide-spread sympathy amongst the masses for their cause.

Pilot Shortage

The present expanding condition of air line transportation and the continued delivery of new aircraft has resulted in a growing shortage of skilled pilots. The lowering of air coach fares made possible by the new, more productive equipment now being placed in service will make the demand for pilots even greater in the months ahead. The Air Line Pilots Association has long advocated a more attractive beginning copilot pay and an easing-up on the utilization of pilots up to the last hour and the last mile legally obtainable. Both of these measures would result in a pool of flying skill which could well bridge such gaps as we now face. Perhaps, as newer, faster, vastly more productive equipment is added to the service—and looking further ahead—the jets are added to the fleet, this pilot shortage will reverse itself and pilots may experience once again those dreary days of 1946 and 1947 when drastic unreasoning cutbacks were going on throughout the industry. That will be the day when air line management and the Air Line Pilots Association should recognize their mutual interests in preserving those pilot skills so laboriously and painstakingly compiled. Today is the day to look toward a solution for what may be a problem ahead.

—Ronald L. Oakman.

Signing the Hawaiian Airlines contract. Back row (left to right) are pilots R. Low, and W. H. Langbehn, D. Irwin, HAL Industrial Relations Director, and B. J. Hogg, Superintendent of Flight Operations. Front row (left to right) are K. Ulrich, Headquarters, pilot S. J. Rosetta, S. C. Kennedy, HAL President, and D. Watson, HAL Vice-President and Treasurer.

Martin 404---

on top of the pedestal. The entire radio panel is on the lower front side of the pedestal where all units can be reached from either side of the cockpit with a minimum of effort. All tab controls are at finger tip distance on the base of the pedestal with the elevator tab in its usual position on either side. The cockpit is roomy and visibility is excellent, with large side windows and the new higher windshield mentioned before.

Radio

The radio rig is well worth mentioning in that it has just about everything that the pilots could want. There are dual Omni Direction finders, dual low frequency direction finders and range receivers, dual Fluxgate compasses, a VHF transceiver, a single HF transceiver, ILS setup, Marker receiver and the terrain warning indicator. This rig should please the boys flying the ship if anything ever will. The ship has two inverters to supply alternating current to the units requiring it and two alterators as standby for electric flight instruments.

The cockpit instrument panel has had a few very worthy additions in the form of Torque Pressure gauges and prop synchroscopes. These instruments should be setup on any large power plant if proper operation is ever going to be effected and they were sorely missed on the 202's with the same power plants. Such additional instrumentation will enable the pilots to take better care of their engines by being certain that their operation is what it is supposed to be, and will pay off in no uncertain terms for the operators after a few serious failures have been prevented by the pilots increased ability to diagnose trouble before it has gone too far. That is not to mention the additional safety factor for the passenger. This represents an important advance in the thinking of all parties concerned and it is good to see it. It may cost a little more to go first class in this respect, but we should all be able to go a whole lot farther by virtue of it.

Cabin

The 404's cabin arrangement is quite similar to that of the 202 except, of course, that there is an extra row of seats making that payload total of forty passengers. The ship was designed strictly from a passenger hauling standpoint and should be used for just that. There is adequate space for the baggage of forty people but practically none for freight, which is a good thing. Most air lines operating passenger schedules have freight schedules also and the scheduled cargo flights should be utilized for their own purpose. It is no secret that it takes longer to load a lot of bulky freight than it does for a passenger to walk out and board his flight. When the passenger does walk out and climb aboard, he is ready to go somewhere, not anxious to sit and wait while two agents are loading a ton of cargo up front. This 404 design is such that a minimum of cargo will be handled on it and the passengers will get the break of being able to get going within a very few minutes after boarding. The tail ramp feature enables passengers to board the flight with no more effort than climbing a normal set of steps at home. He has a right sizeable carry on baggage rack at the top of the tail ramp steps to park his brief case or traveling bag if he so chooses. The cabin will be comfortably climatized and he can relax in one of those nice reclining foam rubber cushioned chairs. By the time the Hostess has retracted the tail ramp and locked the rear cabin pressure bulkhead, the boys up front should have the engines running and be all set to taxi. Man, that passenger never had it so good! He should be out of every station on time and actually get where he's going on schedule, and and that is something you can't do hauling a lot of freight on passenger schedules. This is the passenger's ship all the way.

The Hostess station at the rear of the cabin is compactly designed with seat, and cabin temperature controls, cabin lighting controls, cockpit call, interphone handset and cabin public address system located on the overhead panel. The galley setup at the forward end of the cabin is also compactly designed and fixed up so the meal service can be handled very quickly. The gents who designed this rig, however, have never had the opportunity of playing Hostess and serving meals out of this galley. The meal trays are kept under the galley table itself and when the Hostess gets around to using the bottom row of trays, she either has to back into the coat closet across the aisle or else half way down the cabin aisle in order to pull the trays out of the cabinets. The latter method is not always the safest way of doing it either. It will take a well organized Hostess to handle a full meal service aboard the 404 on some of the short hauls and that's putting it mildly. She's gonna have to go like h—!

Well, that about winds it up for the new 404. It looks a whole lot like the 202, but it is an entirely different airplane. It flies better than the 202 and the pilot has more to work with to get his job done efficiently. The single engine performance of the ship at high gross loads is excellent and the built-in safety features in the general aerodynamic design should make it one of the finest medium transports for some time to come. It does not appear at this writing that Martin Aircraft made any of the same mistakes that were made with the 202. The 202 was of excellent aerodynamic design, but some of the materials used in it were not up to the highest specifications, lightening up on things to make it competitive in the price field. The 404 looks like it is put together to stay.

Now, we'll have to get the rest of the new fleet into operation and find out whether this article is worth anything or not. I like the ship.

Blair---

enough weight on this long hop to change my facial configuration.)

"On Top"

I had so simplified the navigation that even a moron could have kept the aircraft in its proper groove. It was important not to become confused and try to change my procedures. It was too late to come up with any bright new ideas. Above 20,000 feet, the average guy in an oxygen mask is no mental giant, and it was important not to deviate from the flight plan unless forced by weather or other circumstances. It was important to remain "on top" for two reasons: I had to see the sun to accurately steer the machine, and I had no deicing equipment. Staying "on top" was not difficult because cloud formations in the Arctic are usually quite low compared to the frontal formations of the middle latitudes.

If I encountered IFR conditions, I could steer by the gyro for a limited time, but for most of the flight I needed the sun. Failure of the directional gyro did not concern me too much as long as I could operate "on top": there I could steer easily by the shadow of the sun at the base of the sight bar on my astro-compass.

Except for maintaining course and an occasional check with the

sextant there was little to do except check all the important gauges, particularly the voltmeter, coolant temperature, oil pressure and temperature. I shut down my radio after passing Spitzbergen because there would be no communications for some time to come, and, in case of generator failure, it was of considerable importance not to drain the battery before noting the failure on the voltmeter or ammeter.

It was vital that I time my flow of fuel carefully and shift from one wing tank to the other for proper lateral balance, keeping a record of each change. Midway in the flight, I transferred one half of the reserve oil supply.

In case of engine failure I had no intention of bailing out. A pedestrian on that ice would be a lonesome guy, whereas a landing on the ice with the plane more or less intact would provide a fighting chance. Although the polar ice between Spitzbergen and the pole is known to be quite rough for a forced landing, the ice from the pole south to Alaska is quite smooth in many places.

On Course

I had one radio contact with the RNAF flying boat near Spitzbergen and obtained excellent ADF bearings from Bear Island and Svalbard radio station on Spitzbergen. At Spitzbergen I climbed to 22,000 feet, cruising at 325 MPH, correcting my course slightly for a forecast westerly wind. I changed my astro-compass setting approximately two degrees every 10 minutes and took an occasional shot at the sun which showed that I was holding my course nicely. My DR and celestial indicated that I crossed the Pole at 1955 GMT, having bucked a considerable head wind during the first part of the journey. In the area between Spitzbergen and the Pole the weather was mostly low scattered to broken stratus clouds with five miles visibility in a haze which probably extended as high as 30,000 feet. The temperature at 22,000 feet was a mild minus 25 degrees C. Basking in the heat of the Merlin engine, I felt no discomfort in my lightweight summer flying suit.

After passing the Pole, the haze restricted the visibility even more, even hiding the moon. This disturbed me slightly, but not enough to cause me to climb above the haze. At 80° North I picked up Point Barrow on my ADF and crossed it with a sunline. I was exactly where I thought I was. This pleased me no end, and I crossed the coast of Alaska at Point Barrow one minute ahead of schedule. I never saw the moon and am now convinced that it is of little importance to a fast aircraft. I landed at Fairbanks one hour and 40 minutes after passing Barrow.

As an idle curiosity, I made a mental note of the magnetic compass as I went along. At the Pole, it seemed to have approximately 120 degrees of easterly variation decreasing, as the variation chart indicated, as one proceeds south. On the European side, there was very little variation and near the Pole the compass gradually came around to a heading of 60°.

To New York

Oddly enough, I arrived at Fairbanks a half hour before my departure at Bardufoss, on the same day, thus gaining on the clock. My flight time was 10 hours 27 minutes bucking an average 10 knot head wind. Ten hours later, I departed non-stop for New York via the airways, a distance of 3,450 miles. This flight was a routine radio navigational flight, and after passing over the Canadian Rockies the breadth of Lake Huron was my most awesome consideration. Flight time was nine and one-half hours.

The polar navigational summary is a very simple one. Course was maintained simply by relative bearings on the sun, using the astro-compass as a pelorus. From take-off when the sun bearing was to the west southwest (slightly abaft my port beam) to a point several hundred miles north of Point Barrow where the sun crossed the nose of the aircraft, I did nothing more elaborate than keep heading for the sun an additional two or three degrees every 10 minutes. The navigation between radio fixes at Spitzbergen and Point Barrow was fundamentally dead reckoning checking the accuracy of the DR with a sextant. I believe it is reasonable to say that no-wind heading may be taken almost any day on this route and that the resultant drift would not cause an alarming deviation from course before intersecting the Alaskan coastline.

It is interesting to note that when operating in the polar regions close to a north-south track, there should be no cause for concern (using precomputed relative bearings of the sun) if the aircraft falls considerably ahead or behind its flight plan. In high latitudes, for a given time, the relative bearing of the sun does not change appreciably throughout a considerable span of latitude.

These simplifications, of course, apply to high speed, high altitude aircraft. For such aircraft there is no weather problem over the Arctic any more acute than over the U. S., and probably less so. As for the navigation, all that is needed is a celestial gadget to steer by.

During the flight over the Pole, I had a little time for reflection. Looking down on that Arctic ice from an altitude of 22,000 feet I thought of the airmen who had crossed here many years ago and of their struggle against the elements. I couldn't help but think that in 1951 the Arctic seems to be a different ocean. By comparison, I had things pretty easy.

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